

(No Model.)

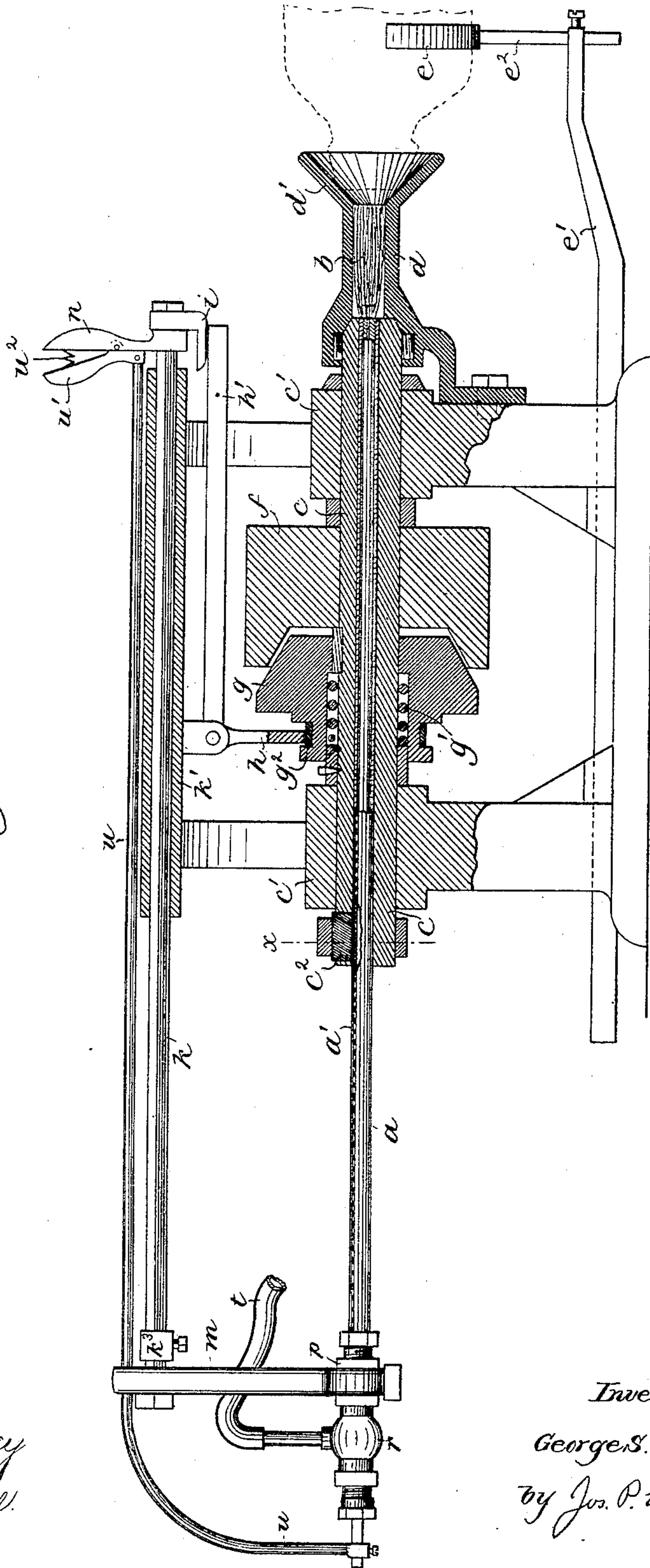
2 Sheets—Sheet 1.

G. S. SLOCUM.
BOTTLE WASHER.

No. 399,576.

Patented Mar. 12, 1889.

Fig. 1.



Witnesses.
Jas. J. Maloney
A. J. Locke.

Inventor,
George S. Slocum,
by Jos. P. Linemore
Att'y.

(No Model.)

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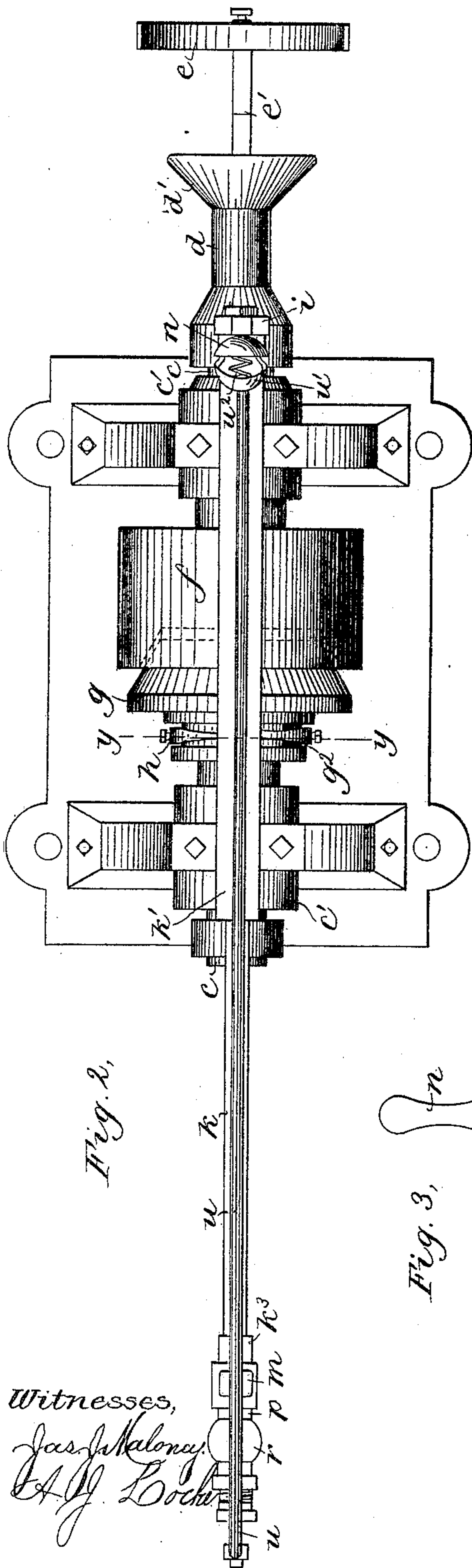


Fig. 2,

Witnesses,
Jas. J. Maloney
A. J. Locke

Fig. 4,

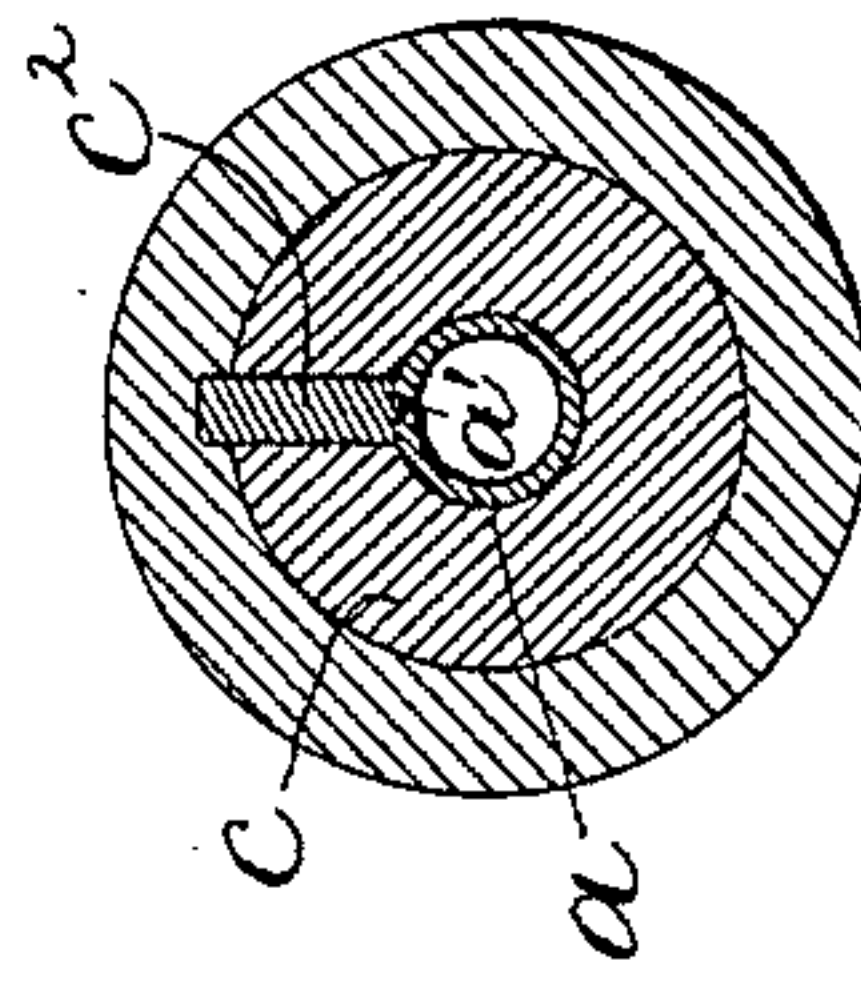


Fig. 5,

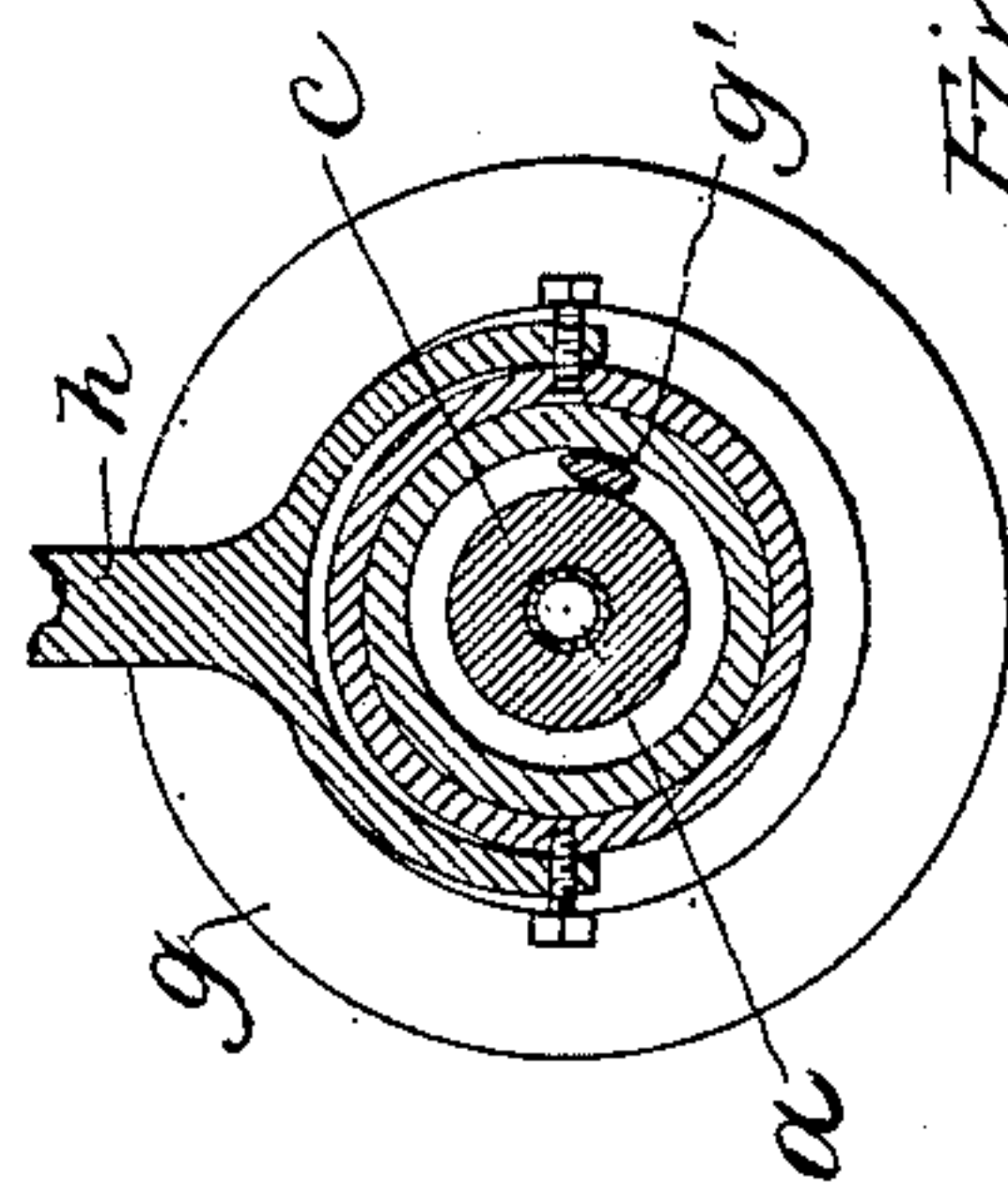


Fig. 6,

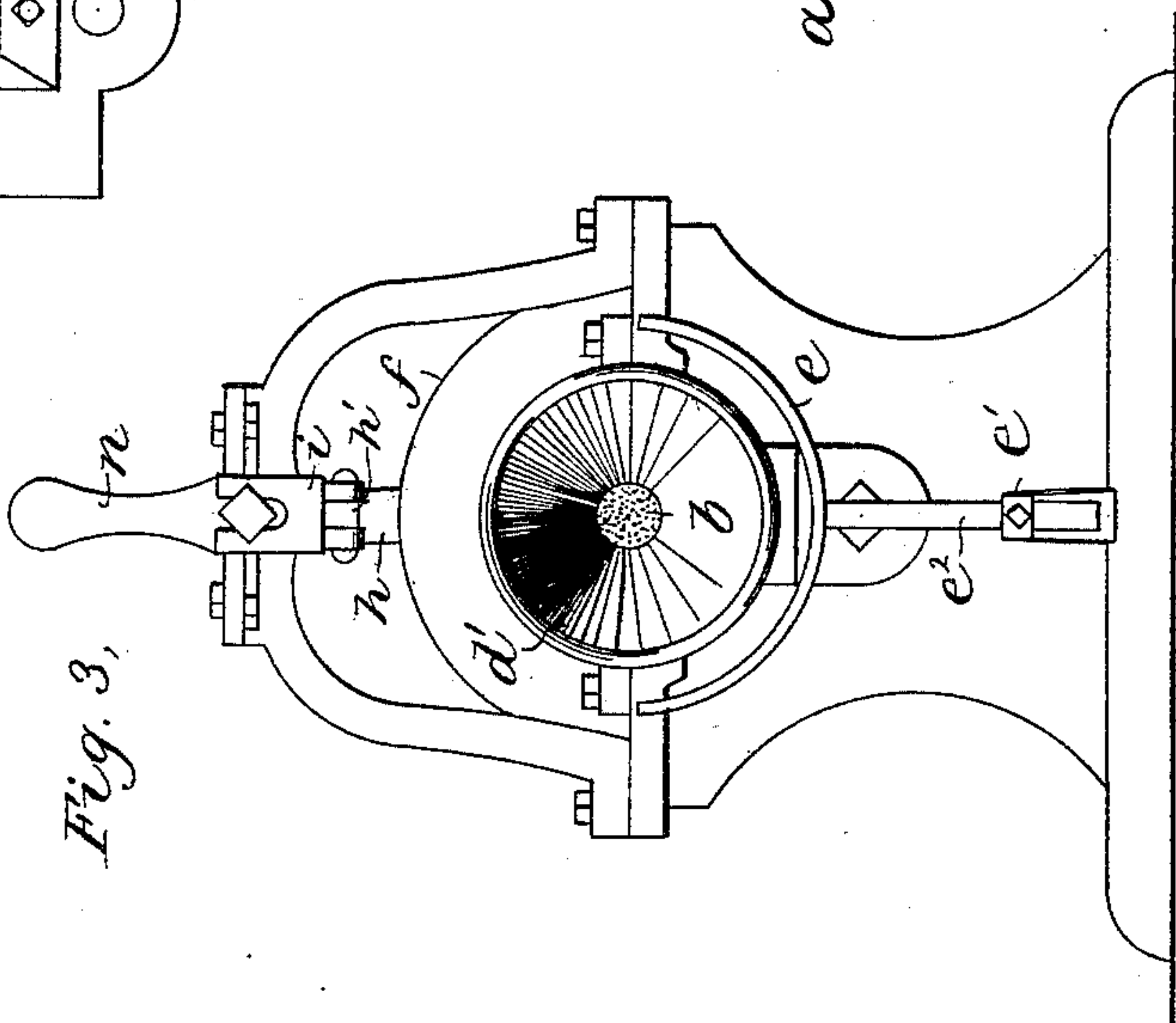
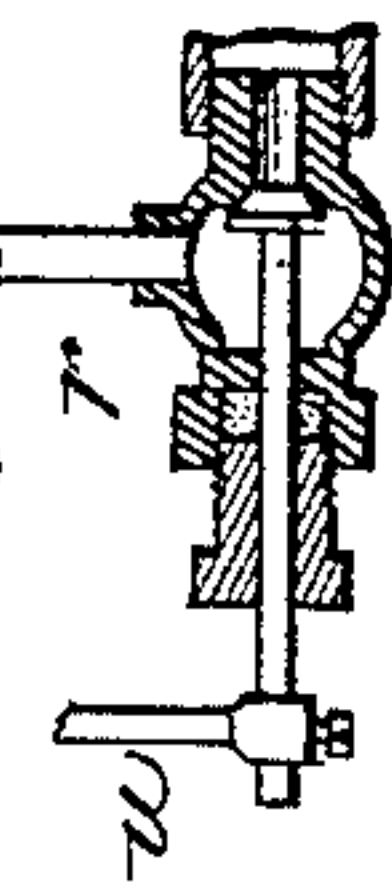


Fig. 3,

Inventor,
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by *Jo. P. Lummou*
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE S. SLOCUM, OF NEWPORT, RHODE ISLAND, ASSIGNOR TO JOSEPH M. HOYT, WILLIAM G. HOYT, AND CHARLES HEALEY, ALL OF LYNN, MASSACHUSETTS.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 399,576, dated March 12, 1889.

Application filed July 19, 1886. Serial No. 208,445. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. SLOCUM, of Newport, county of Newport, State of Rhode Island, have invented an Improvement in
5 Bottle-Washers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a bottle-washing
10 machine of that class in which a brush is introduced into the bottle and rotated therein, so as to rub against and clean the inner surface of the bottle, and when withdrawn from the bottle is held in a brush-receiver. In one
15 type of machines of this class now in use a brush is secured to the end of a shaft that rotates while the brush is in the bottle, and the said shaft is in some cases tubular and serves as a pipe to introduce the water into
20 the bottle while the brush is rotated therein. Such machines are provided with a guide to hold the bottle in line with the rotating shaft, and the brush-receiver, into which the brush is drawn when removed from the bottle, contracts the brush so as to guide it into the neck
25 of the bottle next to be washed. In order to prevent wear of the brush when removed from the bottle, the brush-receiver has in some cases been adapted to rotate with the brush, so that no friction or wear takes place be-
30 tween the brush and the brush-receiver, the brush and shaft in such machines rotating continuously both when in and when out of the bottle.

35 The present invention consists in the combination of devices, hereinafter described and pointed out in the claims, for causing the brush to rotate while in the bottle and cease rotating when out of the bottle. The starting and
40 stopping of the rotation of the brush when introduced into and removed from the bottle are effected automatically without stopping or changing the speed of the brush-actuating device or pulley, which runs continuously, and
45 at once drives the brush at full speed when it has entered the bottle.

The invention is embodied in a machine in which the bottle-guide and brush-receiver are stationary, and the tubular brush-carrying

shaft has a longitudinal movement in a sleeve 50 that surrounds it, and is splined to it, so that the rotary movement of the sleeve causes simultaneous rotary movement of the brush-carrying shaft and brush. The function of this sleeve is to support and stiffen the brush-
55 shaft, which is necessarily slender, as it has to enter the neck of the bottle. The actuating-pulley, driven by a belt or otherwise, is loose upon the sleeve that incloses the brush-shaft, and a clutch is provided by which the said actuating-pulley can be connected with or disengaged from the sleeve, so as to rotate the
60 said sleeve and the brush-shaft and brush or permit their rotation to cease without stopping the rotation of the pulley itself. The longitudinal movement of the brush-shaft in the sleeve carries the brush forward from the brush-receiver into the bottle or removes it from the bottle into the brush-receiver, this movement being produced by the operator; and
65 intermediate mechanism is provided between the brush-shaft and the clutch, before mentioned, by which the clutch is engaged when the brush begins its forward movement into the bottle, and is disengaged at the end of the
70 movement of the brush out from the bottle. Means are also provided for permitting water to flow through the brush-shaft into the bottle while the brush is acting and to stop the flow of water when the brush is removed from the
80 bottle.

Figure 1 is a longitudinal section of a bottle-washing machine embodying this invention, some of the parts being shown in elevation; Fig. 2, a plan view of the machine; Fig. 85
3, an end elevation of the machine as seen looking toward the bottle guide and brush; Fig. 4, a transverse sectional detail on line $x x$, Fig. 1, on a larger scale; Fig. 5, a sectional detail on line $y y$, Fig. 2; and Fig. 6, a
90 longitudinal section of the valve that controls the admission of water.

The brush-shaft a , made tubular to provide for the introduction of water to the bottle, has connected with it the brush b , which may be of any suitable construction, and which, when inside of a bottle, will expand, so as to reach the inner surface of the bottle, and when ro-

tated will rub against and clean the said surface in the well-known manner. The said brush-shaft passes through and is supported in a sleeve, *c*, adapted to rotate in suitable bearings, *c'*, on the frame-work of the machine, the said sleeve being connected with the brush-shaft in such manner that both turn together, although the brush-shaft *a* is free to move endwise in the sleeve, this connection being effected by a spline or key, *c²*, fixed in the sleeve *c* and entering a longitudinal groove, *a'*, in the brush-shaft *a*. When the brush is not operating upon the bottle, it is contained within a brush-receiver, *d*, which is in this machine shown as fixed upon the frame-work and stationary, and performs the usual function of holding the brush contracted sufficiently to enter the neck of the bottle, which is held in line with the brush-receiver by a flaring bottle-guide, *d'*, at the end of the brush-receiver. The proper holding of the bottle is facilitated by a support, *e*, that receives the body of the bottle, and is itself adjustably connected with the frame-work by an arm, *e'*, in which the stem *e²* of the bottle-support is vertically adjustable.

When a bottle is to be washed, its mouth is pressed into the funnel-shaped guide *d'*, which centers it with its neck in line with the brush-receiver *d*, after which the forward movement of the brush-shaft and brush with relation to the bottle will carry the brush through the neck of the bottle and down the entire length of the bottle, in which it expands, so as to reach the inner surface of the bottle. The rotation of the brush, by which it is caused to rub against the inner surface of the bottle to clean the same, is effected by an actuating-pulley, *f*, shown as turning loosely on the sleeve *c*, and intended to be rotated continuously at the proper speed by a belt or other usual means. The said pulley is adapted to actuate the brush-shaft at the proper time by means of a clutch, one member, *g*, of which is splined to the sleeve *c*, so as to rotate therewith and to be capable of moving lengthwise thereon, and the said clutch member *g* is normally pressed toward the other member of the clutch—namely, the pulley *f*—by a spring, *g'*, said members engaging, when pressed together by a tapering friction-surface, in the well-known manner.

In order to engage and disengage the clutch at the proper times, the movable clutch member *g* is acted upon by a clutch-shipper, (shown as an elbow-lever, *h h'*), pivoted on the frame-work of the machine and having its arm *h* forked to engage a collar in an annular groove, *g²*, in the clutch member *g*. The said clutch-shipper is operated simultaneously with the entrance of the brush into the bottle and its removal therefrom by an actuating-cam, *i*, connected with a slide-bar, *k*, movable in a guide, *k'*, and connected with an upright, *m*, that is connected with the brush-shaft *a*. The slide-bar *k* is provided with a handle, *n*, for the operator, who, by pulling forward the

said handle toward the bottle, moves the brush-shaft forward, introducing the brush into the bottle, and at the beginning of this movement the cam *i* disengages the arm *h'* of the shipper and permits the spring *g'* to throw the clutch into engagement, so that the pulley *f* is at once connected with the brush-shaft through the sleeve *c* and rotates the said shaft at the desired speed, and the operator can then, by moving the handle *n* backward and forward, cause the brush to move up and down the inner surface of the bottle, it being intended to provide for sufficient lengthwise movement of the shaft *a* to cause the brush to reach and act on the bottom of the bottle. The forward movement of the brush is limited by a stop, *k³*, on the slide-bar *k*, that is adjustable to give the proper movement for bottles of different lengths. The upright *m* is connected with a coupling, *p*, that receives the end of the brush-shaft *a*, permitting the said shaft to rotate in it while maintaining a water-tight joint, and the said coupling is connected with a valve, *r*, the inlet of which is connected by a flexible pipe, *t*, with a suitable supply of water or other liquid that may be used for washing the bottles. The flow of liquid into the brush-shaft *a* and to the bottle is controlled by the said valve *r*, which may be operated at the proper times by means of a rod, *u*, connected with the valve-stem and with an actuating-handle, *u'*, adjacent to the handle *n*, so that it may be grasped and operated by the same hand that operates the handle *u* to introduce the brush and remove it from the bottle. The handle *u'* is so arranged that the hand will naturally grasp it and the handle *n* together, and in drawing the handles forward for the insertion of the brush into the bottle will naturally operate the handle *u'*, so as to admit water; but in pushing on the handle *n* to withdraw the brush from the bottle the handle *u'* will naturally be released, and the said handle *u'* is acted upon by a spring, *u²*, in a direction to close the valve *r* and cut off the flow of water.

Various devices have been used in bottle-washing machines of this class to brush or rub over the inner surface of the bottle, being constructed to contract sufficiently to pass through the neck of the bottle and then expand when in the bottle. Among those most commonly used are the ordinary bristle-brush and a spring-brush or rubber consisting of spring-arms carrying rubbing devices that may be made of india-rubber and work on the inner surface of the bottle.

The present invention is not limited to any particular device for scouring the inner surface of the bottle, and the term "brush" is intended to include any device that will pass through the neck of the bottle and then expand to act on the interior of the bottle. It is obvious that the present invention is equally applicable to a machine in which the bottle moves onto the brush instead of having the brush move into the bottle, as shown for the

purpose of illustration, the main feature of the invention consisting in the construction of the clutch and its actuating mechanism, as set forth, by means of which the rotation of the brush ceases when it leaves the bottle and begins when it enters the bottle by the movement of one with relation to the other.

I claim—

1. The combination, with the brush-receiver and rotary brush-shaft, one movable with relation to the other, and driving mechanism for rotating said brush-shaft, of a spring-closed clutch for transmitting motion from said driving mechanism to said brush-shaft, the members of which engage at the beginning of the movement by which the brush enters the bottle and disengage at the end of the movement by which the brush is withdrawn from the bottle, substantially as and for the purposes hereinbefore set forth.

2. The combination of the brush-shaft and brush-receiver, one movable with relation to the other, with a pulley free to rotate loosely with relation to the brush-shaft and provided with one member of a clutch, and a co-operating clutch member connected to rotate with the brush-shaft and longitudinally movable

with relation to the brush-shaft and to the said pulley, a shipper-lever engaged with said longitudinally-movable clutch member, and an actuating projection that operates said shipper and is itself operated by the longitudinal movement of the brush-shaft or brush-receiver, one relative to the other, substantially as described.

3. The combination of the brush-shaft with a sleeve inclosing the same and connected to rotate therewith and bearings for said sleeve, a pulley loose on said sleeve and provided with one member of a clutch and a co-operating clutch member keyed upon said sleeve and longitudinally movable thereon to engage and disengage said pulley, as described, and a clutch-shipper engaged with said longitudinally-movable clutch member, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. S. SLOCUM.

Witnesses:

FREDERICK P. FISH,
GEO. D. NOYES.